

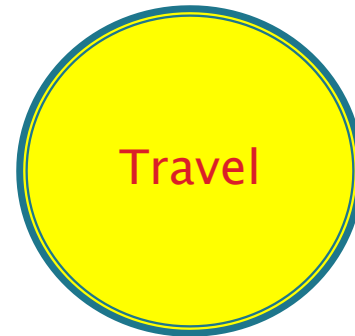
Travel Vaccines

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*Presented at the 7th Annual Meeting of the WNY Pediatric,
Adolescent and Adult Immunization Coalitions*

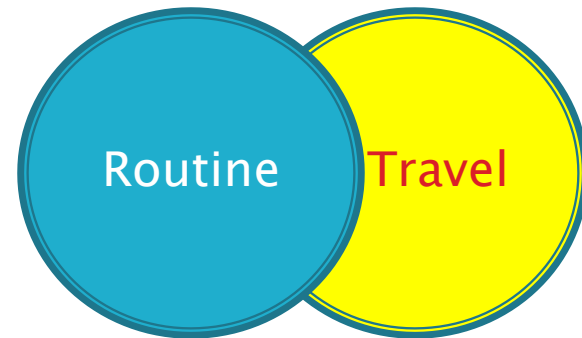
What and why?

- What is a routine vaccine?
- What is a travel vaccine?



Routine Vaccines and International Travel

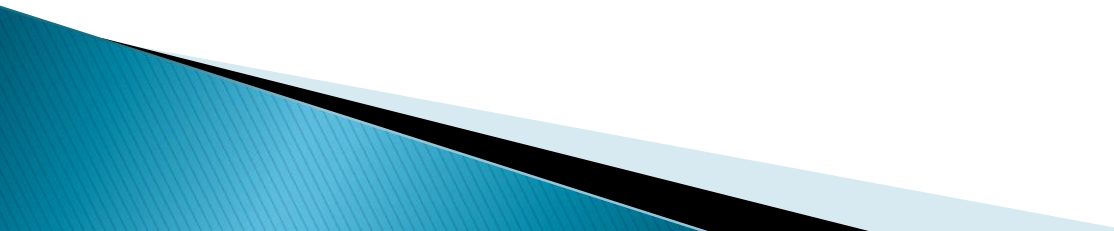
- ▶ Hepatitis A and B
- ▶ Polio
- ▶ MMR
- ▶ Varicella
- ▶ Td/Tdap
- ▶ Meningococcal



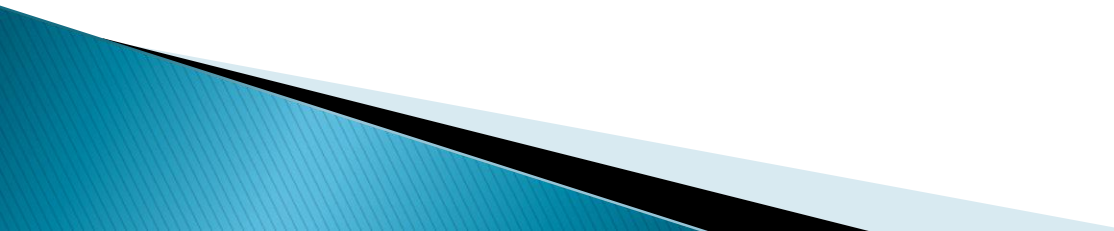
Recommended vs. Required

- ▶ Very few international requirements
 - Yellow Fever
 - Meningococcal

Patient Encounter

- ▶ Patient makes an appointment for a travel health visit
 - ▶ Patient mentions that he/she is travel during a routine visit
 - ▶ Patient makes an appointment for “vaccines only”
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Barriers to Adult & Travel Vaccines in Primary Care

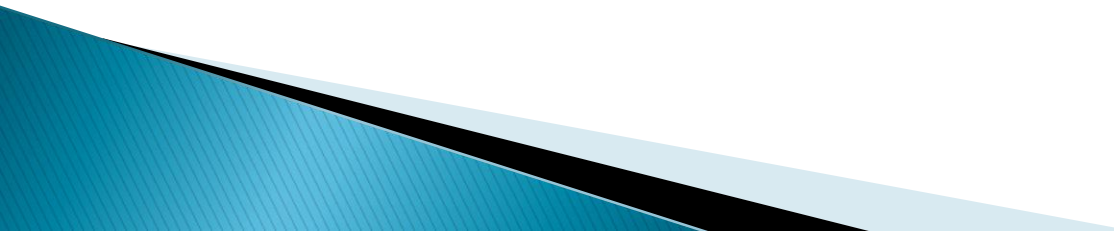
- ▶ Increasing cost of vaccines and biologics
 - ▶ Poor reimbursement by insurance companies
 - ▶ Vaccine handling/storage issues
 - ▶ Cost of staff to manage vaccine program
 - ▶ Constantly changing vaccine schedules and recommendations
 - ▶ Practice not well-versed in vaccinology
 - ▶ Travel medicine has emerged as a specialty
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Routine

- ▶ Tetanus, diphtheria, pertussis
 - These bacteria still cause disease in developing countries
 - Tetanus grows worldwide, lives in contaminated soil, dust, manure and contaminated fomites
 - Can boost tetanus if more than 5 years since last dose for higher risk travelers (those in remote areas, vigorous activities)
 - Several countries still with endemic diphtheria
 - Pertussis cyclical in other countries, similar to U.S.

Routine

► Influenza

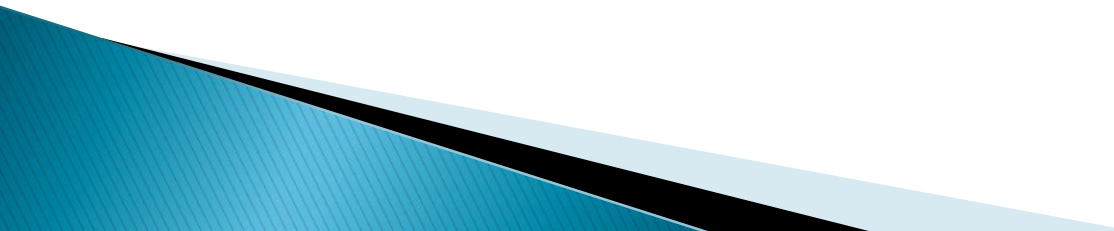
- Viruses spread by respiratory droplet, contact with infected secretions
 - Symptoms can lead to pulmonary complications and mortality
 - Air travel major risk factor
 - Southern Hemisphere flu season April through September
 - Northern Hemisphere flu season October through May
 - Epidemics found throughout the globe
 - Tropics and subtropics flu season all year round
 - Vaccination recommended for travelers, especially those in large tourist groups
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Routine

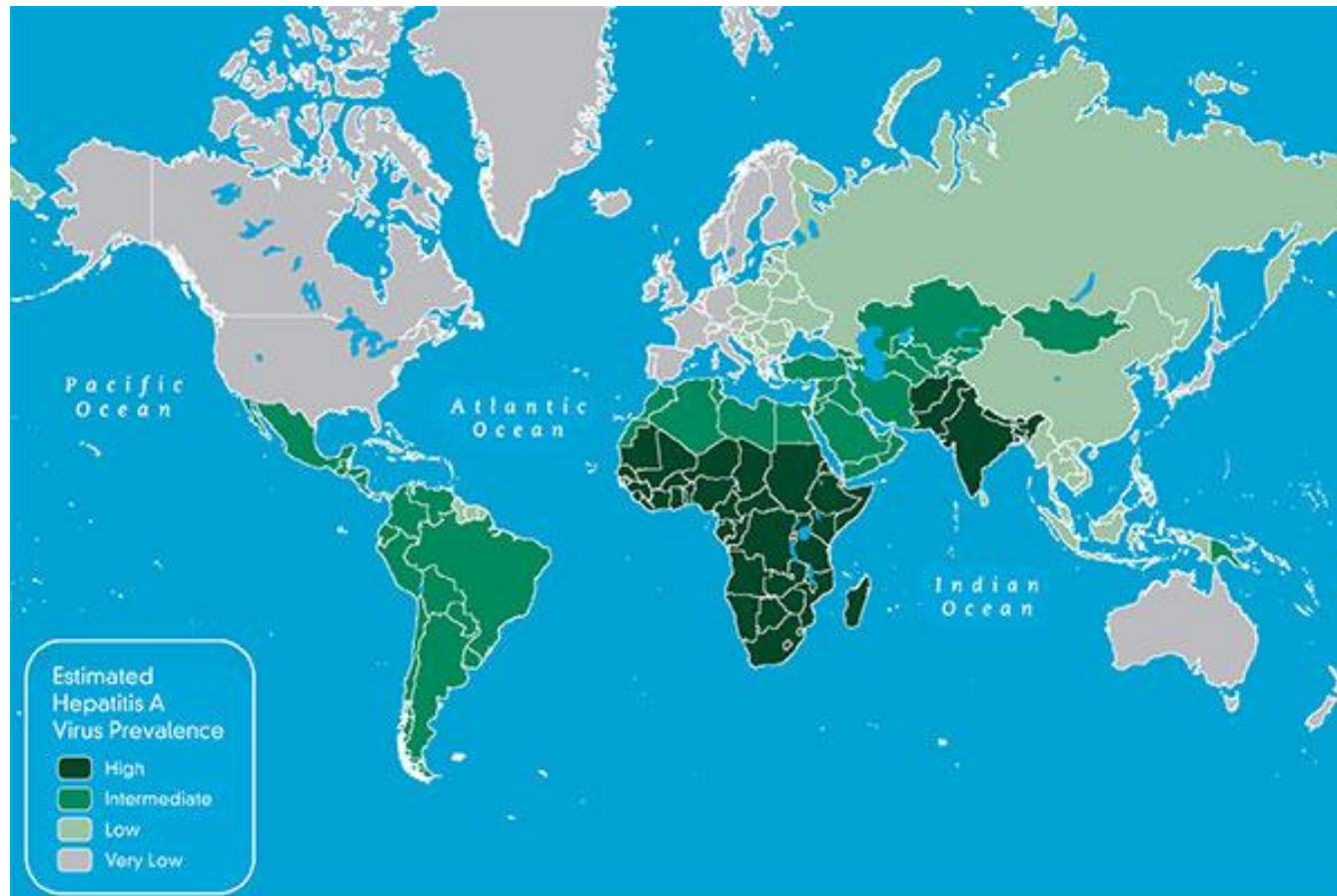
- ▶ Measles, Mumps, Rubella
 - Should complete series prior to travel
 - Can give first dose as early as age 6 months, however that dose is not considered valid toward the two-dose recommendation on the ACIP schedule

Routine

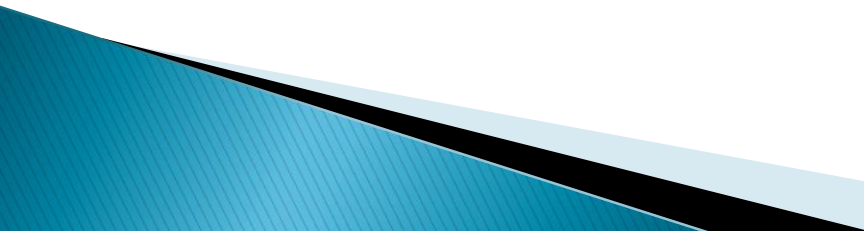
▶ Hepatitis A

- Liver virus found in infected stool; transmitted by contaminated food & water
 - One of the most common vaccine-preventable infections acquired during travel
 - Flu-like illness, jaundice, severe abdominal pain and diarrhea, commonly requiring hospitalization; mortality between 0.3% and 1.8%
 - Risk for travelers is high due to nature of transmission
 - Vaccination indicated for travelers to endemic regions
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Hepatitis A

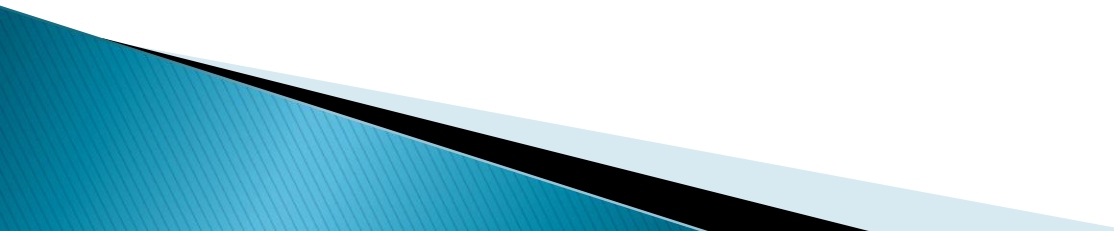


Hepatitis A Vaccine

- Two in U.S., Vaqta® (Merck) and Havrix® (GSK).
 - Two dose series, second dose 6–12 months after 1st.
 - Rapid, excellent antibody protection, within 2 weeks after 1st dose
 - Second dose confers long-term protection, over 20 years
 - Licensed for ages 1 year and up
 - On pediatric immunization schedule in U.S. since 2005
 - 0.5ml through age 18; 1ml ages 19 and up
 - Given IM in the deltoid
 - IG used if < 1 year old, or no time for vaccine
 - IG offers short-term protection; used for post-exposure
 - Vaccine can also be used for post-exposure
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Routine

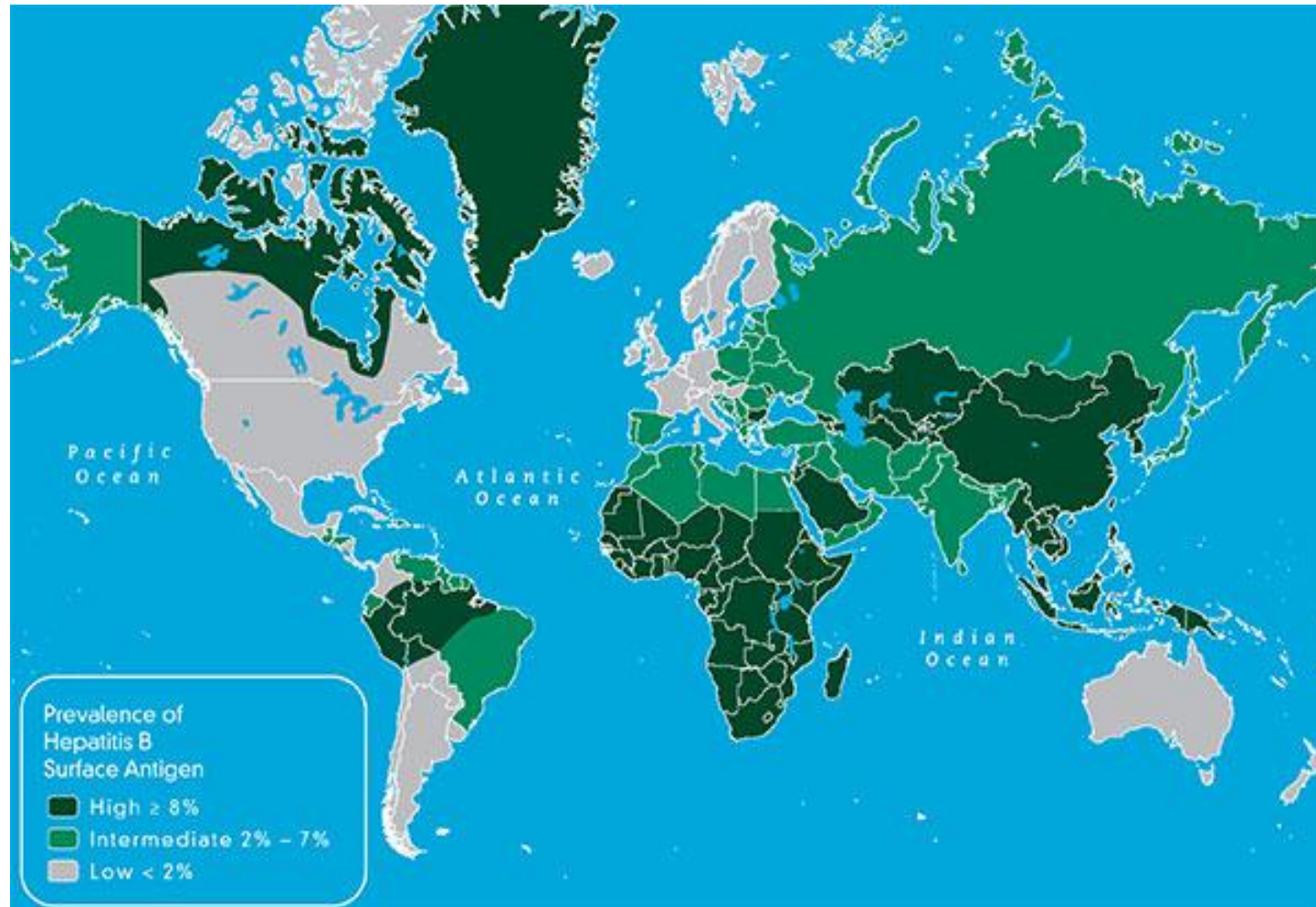
▶ Hepatitis B

- Found in blood and body fluids; spread by contact with these fluids
 - Vaccination indicated for travel to areas of high endemicity and epidemics
 - Risk for travelers generally low unless visiting area with high endemicity or current epidemic
 - Risk can go up exponentially if traveler requires urgent medical or dental care
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Hepatitis B Vaccine

- Several products available in U.S. including Engerix® (GSK), Recombivax® (Merck), and pediatric combination vaccines
- Three dose series, confers long-term immunity when completed over 20 years; day 0, day 30 and 6 months
- Alternate dosing schedules available for accelerating immunity, a good choice for travelers when time permits
- Licensed for use across lifespan, on pediatric schedule
- 0.5ml ages 0 through 18, 1ml age 19 and up
- Given IM in deltoid; use vastus in peds < 1 year old

Hepatitis B




Hepatitis A/B Vaccine Combined

▶ Twinrix® (GSK)

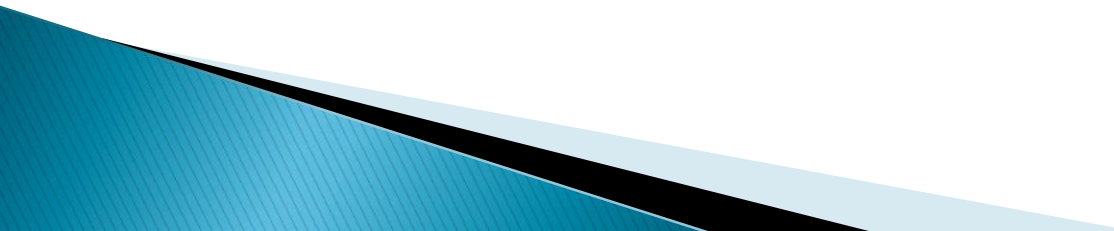
- Licensed for use ages 18 and up; confers long-term immunity when series complete
- Follows same schedule and acceleration options as Hepatitis B (day 0, 30, 6 months)
- Dose of Hepatitis A antigen is decreased in the combination product, therefore not a good option for travelers who only have time for one dose before departure.
- 1 ml IM in the deltoid

Routine

▶ Polio


- Virus spread by fecal–oral route, or less commonly oral–oral
 - Can cause paralysis and meningitis
 - Still endemic to 3 countries, others have occasional outbreaks
 - Risk for travelers is low, unless visiting country with recent outbreak or an endemic country; also post–disaster
 - Vaccination indicated for these travelers
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Polio

- ▶ IPOL® (Sanofi) only current monovalent product in U.S., several combination vaccines available for peds
 - IPOL® licensed for ages 6 weeks and up
 - Primary series good for ~10 years after last dose
 - Good immune memory created with 1 adult boost, for lifetime
 - Inactive, low incidence of side-effects
 - 0.5ml subq outer arm
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Routine

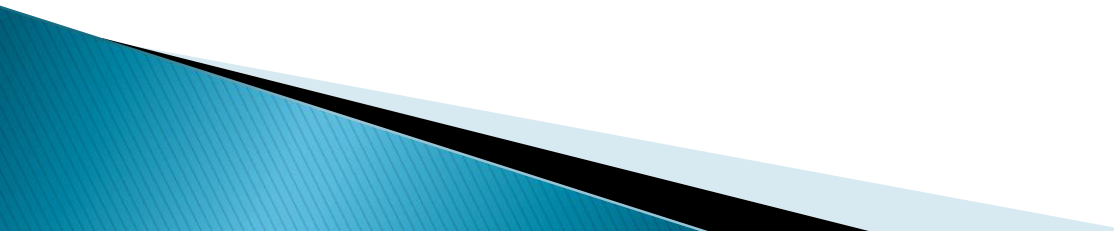
▶ Meningococcal

- Bacteria spread through contact with nasopharyngeal secretions
 - Causes meningitis and sepsis, leading to neurologic sequelae if not diagnosed and treated rapidly
 - Peds are given first dose at adolescent well-visit, ACIP
 - Boosted if still at risk 5 years later
 - Vaccination indicated for travelers to Meningitis Belt, or countries with current epidemics
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Meningococcal



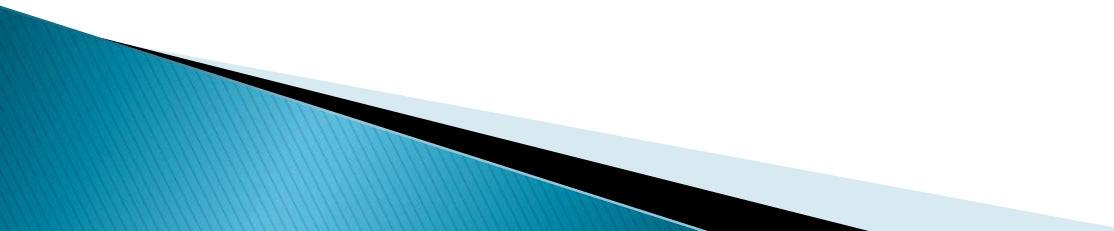
Meningococcal

- Three U.S. vaccines that cover 4 serotypes of disease, A, C, Y, and W-135.
 - New peds combo-vaccine that only covers 2 serotypes – not to be used for travelers, MenHibrix® (GSK).
 - Separated into conjugates (MCV4) and polysaccharides (MPSV4)
 - Menveo® (Novartis) MCV4 – licensed ages 2 to 55; 0.5ml IM; 5 years immunity
 - Menactra® (Sanofi) MCV4 – licensed ages 9 months to 55; 0.5ml IM; 5 years immunity
 - Menomune® (Sanofi) MPSV4 – licensed ages 2 and up, but recommended for ages 55 and up; 0.5ml subq; 3 years immunity
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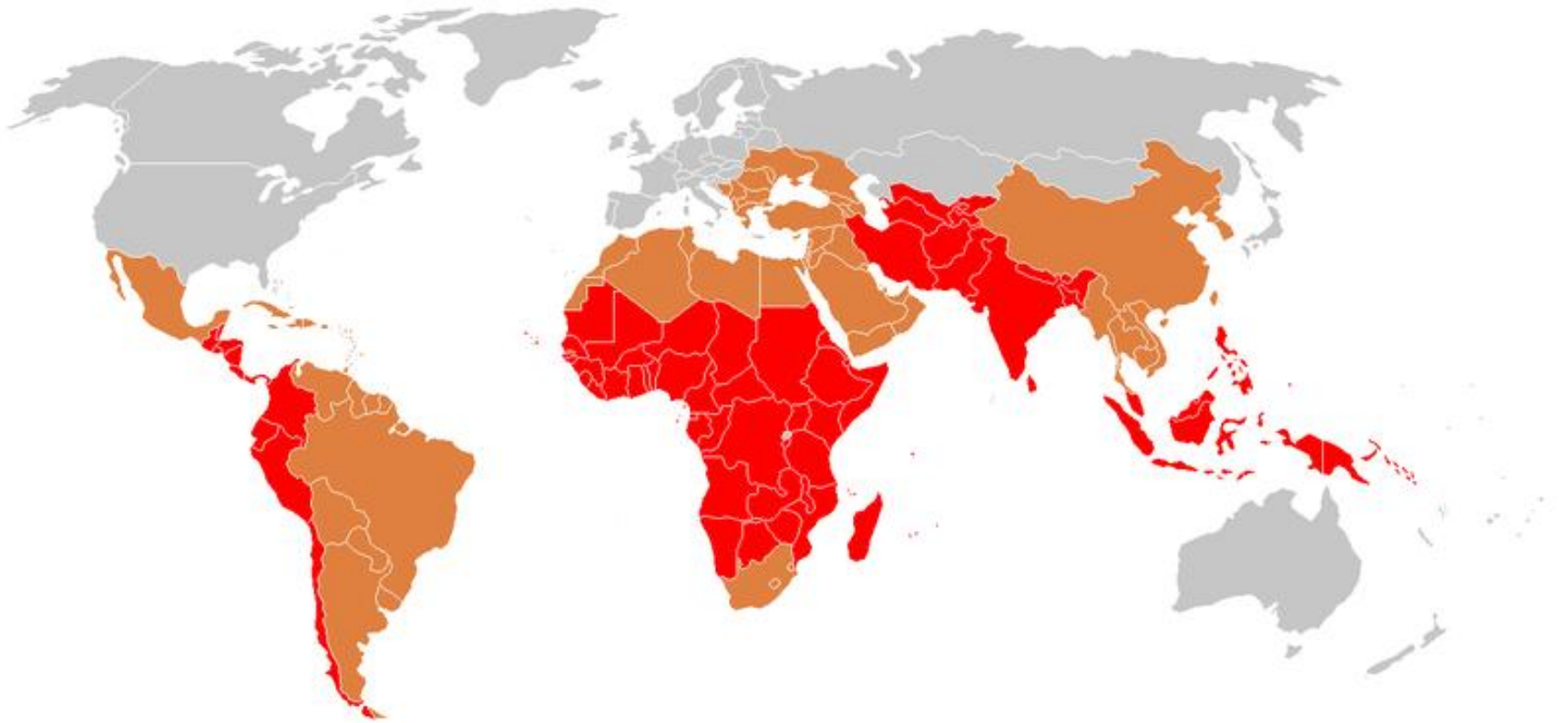
Exotics / Specialty Vaccines

- ▶ Typhoid fever
 - ▶ Yellow Fever
 - ▶ Japanese Encephalitis
 - ▶ Rabies
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Typhoid Fever

- Bacteria found in contaminated food & water
 - Spread by ingestion of the same; can be passed person to person via contact with stool or urine of infected person/carrier
 - Endemic to Central, South Americas, Africa, Asia, Eastern Europe
 - Causes fever, rash, progressing to GI illness which leads to intestinal perforation if left untreated; mortality 20%
 - Risk for travelers high due to nature of transmission
 - Vaccination indicated for travelers to endemic regions
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Typhoid Fever



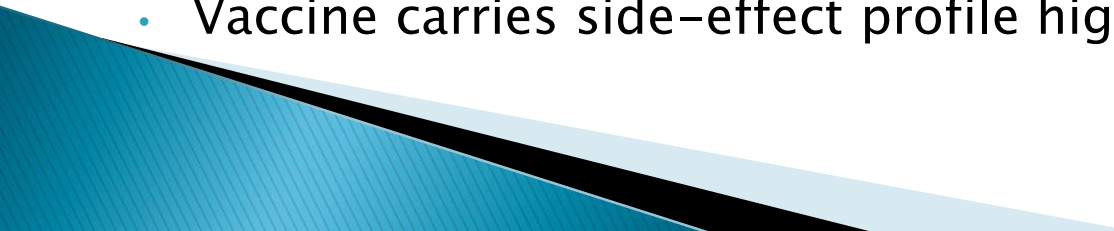
Incidence of typhoid fever

- ◆ Strongly endemic
- ◆ Endemic
- ◆ Sporadic cases

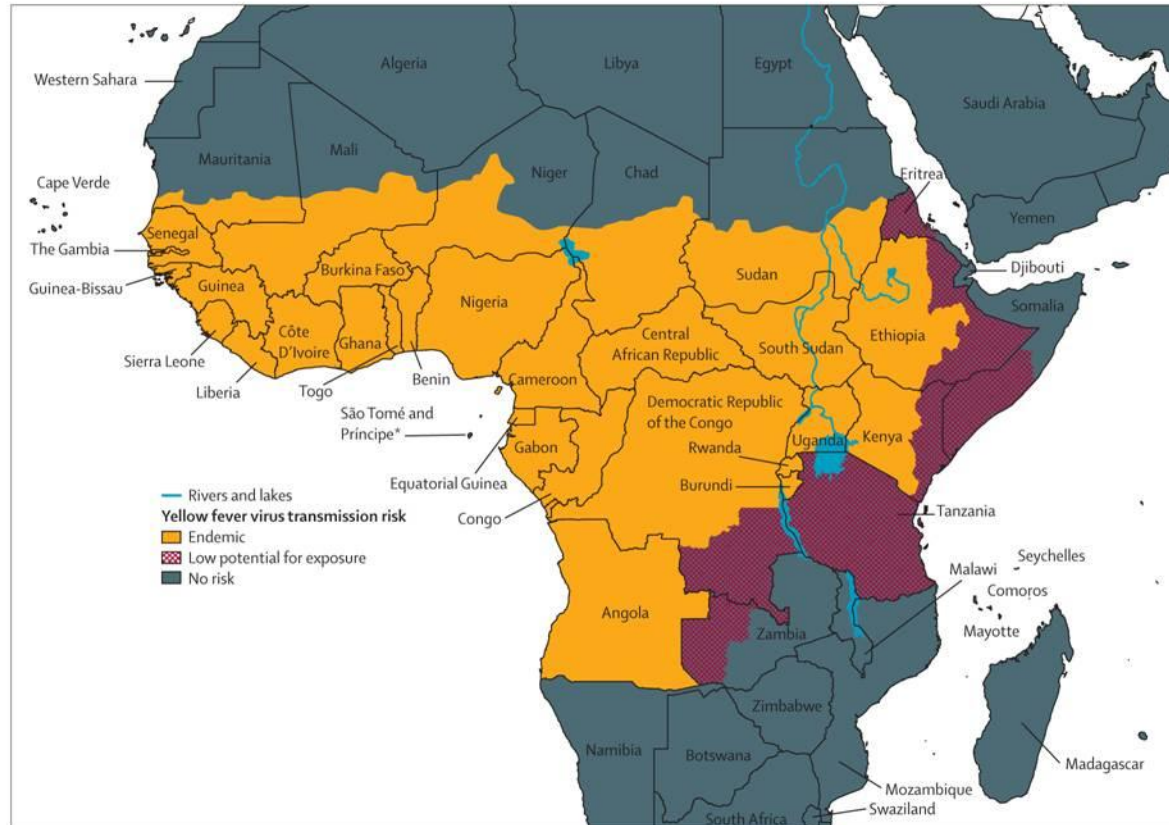
Typhoid Fever

- Two vaccines available in U.S., Typhim Vi® (Sanofi) and Vivotif® (Berna)
- 50–80% Efficacy for both
- Typhim Vi® is inactive, licensed for ages 2 and up; 1 dose confers immunity for 2 years
- Typhim Vi® given 0.5ml IM, deltoid
- Vivotif® is live bacteria, series of 4 tablets taken orally, confers immunity for 5 years; licensed ages 6 and up
- Vivotif® must be refrigerated, and taken on empty stomach

Yellow Fever

- Virus carried by infected mosquitoes
 - Endemic to many countries in South America and Africa
 - Spread ONLY by mosquito bite, not person to person
 - Causes flu-like symptoms, progressing to organ failure
 - High morbidity/mortality rates
 - Vaccination recommended for travelers to endemic regions, may be required to enter into country
 - Vaccine carries side-effect profile higher than other vaccines
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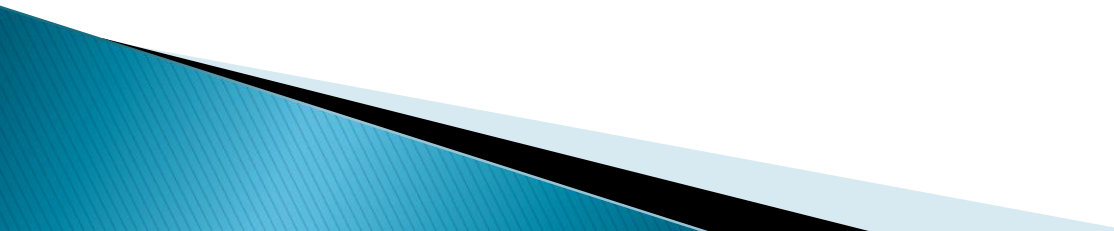
Yellow Fever



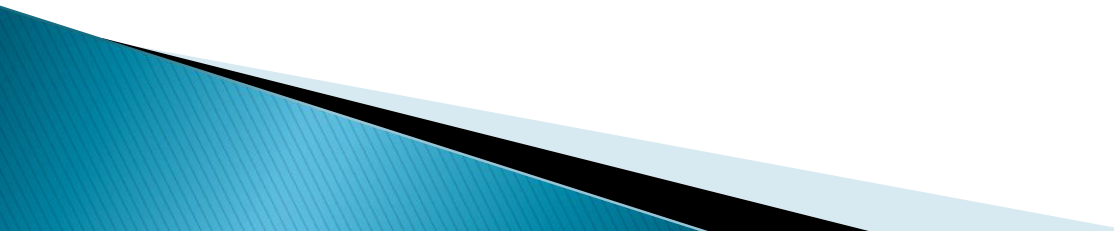
Yellow Fever



Yellow Fever

- YF–Vax® (Sanofi Pasteur) only U.S. product available
 - One dose confers excellent antibody protection for 10 years
 - Licensed for ages 9 months and up
 - Caution in use over 60 years old
 - Provider must be accredited by NY State to give YF vaccine
 - 0.5ml subq
 - Side-effects can occur up to 28 days post vaccination
 - Local reactions are common and not dangerous
 - Vaccine grown in egg protein
 - Proof of vaccination documented on yellow card, aka International Certificate of Vaccination (ICV)
 - Proof of vaccination is required for entry into several countries in South America and Africa
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Japanese Encephalitis

- Virus carried by mosquitoes infected through enzootic cycle
 - Endemic to rural regions of Asia, South Asia and Southeast Asia
 - Causes fever, headache, encephalitis
 - High morbidity and mortality rates
 - Risk to U.S. travelers is low if travel is limited to urban areas for less than 2 weeks
 - Itinerary and planned activities are important to consider
 - Vaccination recommended for travelers to endemic regions or epidemic regions
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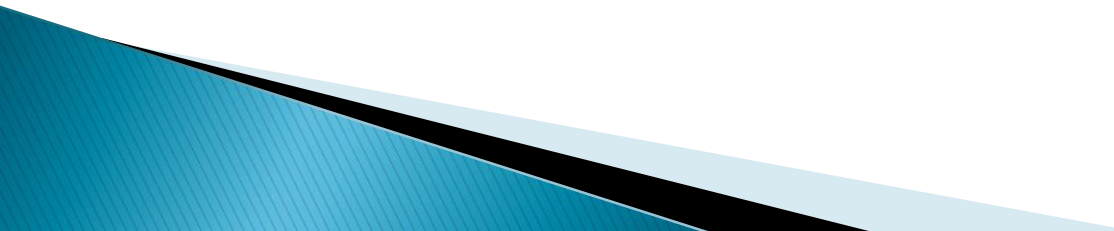
Japanese Encephalitis



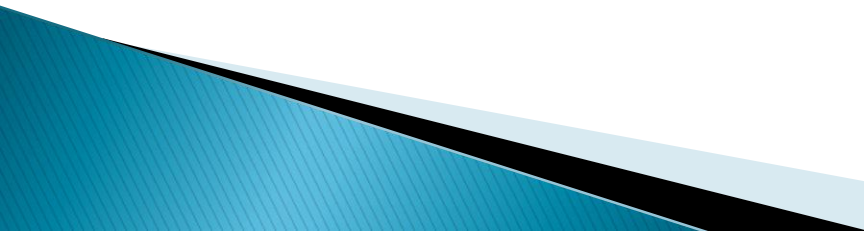
Japanese Encephalitis

- IXIARO® (Intercell, distributed by Novartis) is only licensed vaccine in the U.S.
- JE-VAX® (Sanofi) no longer available
- Licensed for ages 2 months and up (May 20, 2013)
- Two dose series, day 0 and day 28, confers excellent antibody protection after 2nd dose, lasting only 1 year
- Must boost yearly if patient continues to be at risk
- Human cell culture vaccine, few side effects
- Expensive
- 2mos–3 years, 0.25ml IM; 3 years and up, 0.5ml IM, deltoid
- ACIP June 2013 meeting agenda – vote for peds indication

Rabies

- Virus found in saliva and brain tissue of infected animals; transmitted by the bite/scratch of infected animal
 - Causes rapid deterioration of nervous system with almost certain mortality
 - Can take weeks or months for symptoms to present
 - Risk for travelers dependent on location and activities
 - Recommended for travelers spending increased time outdoors in wild, or working with animals
 - Prompt wound care can decrease virus transmission
 - Vaccine can be difficult to find d/t supply issues
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Rabies Vaccine

- Pre-exposure regimen should not be started unless it can be completed prior to departure
 - Pre-exposure regimen is day 0, 7, and 21 or 28
 - 1ml IM, inactive virus, deltoid
 - Good antibody protection for between 2–6 years once complete, must get titers every two years if still at risk
 - Once pre-exposure regimen is complete, still need 1 more dose of vaccine after exposure
 - Side effects not common
 - Expensive
 - Pre-exposure supply affected in U.S. in recent years
 - Review wound care regimen and evacuation insurance with clients who are at high risk and can't find vaccine before departure
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Other Exotics / Specialty Vaccines

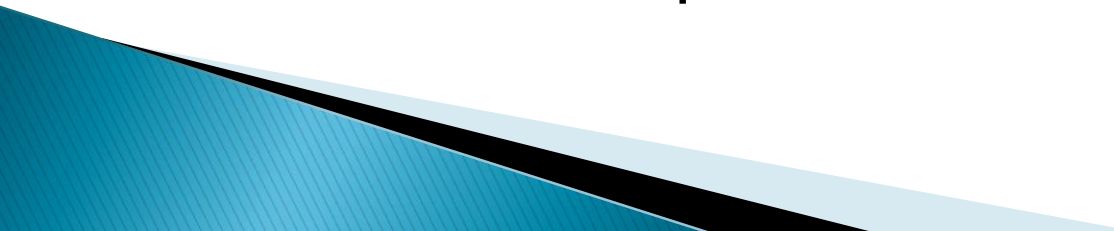
▶ Cholera

- Vaccine no longer available in U.S. d/t low efficacy
- Available in Canada under name Dukoral® (Berna).

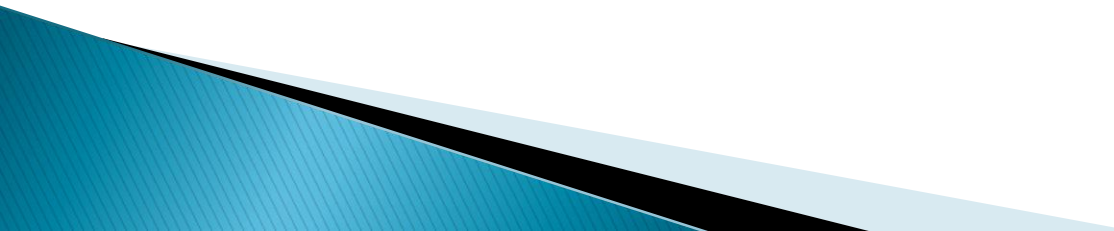
▶ Tick-borne Encephalitis

- Found in temperate regions of Europe and Asia
- 3 subtypes of virus, one having mortality 20–40%
- Vaccine available in Europe, Canada; 3-dose series

When to refer

- ▶ International travel necessitates a travel health visit with an experienced provider in travel health that has access to current surveillance data
 - ▶ Travel health visit should include vaccinations as well as counseling on food/water borne illness, insect borne disease, safety and security, altitude illness, travel evacuation, non-vaccine preventable diseases and how to manage illness during travel
 - ▶ Co-management between Primary Care and Travel Health specialist can and often occurs
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Low risk patients

- ▶ Low risk never means no risk
 - ▶ VFRs
 - ▶ Dangers of counseling against immunization
 - ▶ Weigh risk of vaccination issues vs. risk of disease
 - ▶ Consider all factors (itinerary, medical hx, duration of exposure, activities, etc.)
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Resources for Healthcare Providers and Patients

- ▶ International society for travel medicine
 - www.istm.org
- ▶ U.S. Centers for Disease Control
 - www.cdc.gov/travel
- ▶ World Health Organization
 - www.who.int
- ▶ Passport Health, LLC.
 - www.Passporthealthusa.com
- ▶ Sanofi Pasteur
 - www.travelvacs.us

Sources

- ▶ *CDC Health Information for International Travel, The Yellow Book 2012*, US Department of Health and Human Services, Oxford University Press.
- ▶ *Epidemiology and Prevention of Vaccine-Preventable Diseases*. Atkinson, W, Wolfe, S, Hamborsky J, McIntyre, L, ed. 12th Edition, Washington DC: Public Health Foundation, 2012.